

Litespan System Software Release 10.1

INTRODUCTION

This document provides a description of the features being introduced in Litespan software release 10.1. Since this release is pending, this bulletin is for information purposes only and is subject to change. Features discussed in this bulletin are as follows:

- ▼ **System and Operations Features**—functionality relating to content and installation
- ▼ **Litespan Hardware Features**—hardware features applicable to the Litespan system and user interfaces
- ▼ **Litespan Software Features**—software features applicable to the Litespan system and user interfaces
- ▼ **ADSL Platform**—functionality relating to the new Litespan ADSL platform
- ▼ **ADSL Hardware Features**—hardware features applicable to the ADSL-capable channel banks
- ▼ **ADSL Software Features**—software features applicable to the ADSL-capable channel banks
- ▼ **Broadband Platform**—functionality relating to the new Litespan-Broadband platform
- ▼ **Broadband Hardware Features**—hardware features applicable to the Broadband system architecture
- ▼ **Starspan Features**—features applicable to the Starspan fiber and copper-to-the-curb solutions
- ▼ **New Software Keys**—new keys that are required to enable certain Litespan features

SYSTEM AND OPERATIONS FEATURES

Release 10.1 supports all Litespan features introduced in earlier releases and both the Litespan-2000 and Litespan-2012 platforms. Release 10.1 supports direct upgrades from releases 8.2.2, 8.2.3, 8.2.4, 8.2.5, 8.2.6, and 9.2.2. Litecraft Pro release 3.1 is the associated craft interface device used with this software release and can be loaded on to any workstation that is using Windows 95/98/NT. AMS release 3.2 is the associated Element Management System used with this software release. The Access Management System (AMS) platform is required to perform remote software download (local software download can still be performed using Litecraft). Remote software download utilizes an X.25 or TCP/IP connection provided by the communications interface unit (CIU) or the ethernet interface unit (EIU) in a Litespan channel bank.

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LITESPAN HARDWARE FEATURES

OC-3 High-Speed Unit for the Litespan-2012

The OC-3 high-speed optical interface for the Litespan-2012 is an alternate interface to the existing OC-12 high-speed optical interface. The new OC-3 HSU card provides an optical termination point for an OC-3, STS time slot assignment and routes STS-1s to the appropriate destination in the Litespan-2012 common control. This new interface gives an optical migration path for the 2012 platform and the flexibility to be used in existing OC-3 rings.

1550 OC-3 OTU for the Litespan-2000

The new 1550-nm OTU is a redesigned optical transmit unit (OTU) that will allow for transmission on the 1550-nm wavelength. The existing optical receive unit (ORU) has the ability to receive on either the 1310-nm or 1550-nm wavelengths. In association with WDM optical couplers, the 1550-nm OTU will allow for the transport of the traditional TDM-based OC-3 and the new ATM-based OC-3c on the same fiber from the Litespan COT to the Litespan RT. By keeping the TDM OC-3 at 1550 nm and the ATM OC-3c at 1310 nm, the OC-3c signal can be split out and sent to the ABCU, BFB optical port or ATM switch before reaching the Litespan optical interface at either the Litespan COT or RT.

Electronic Business Set, Integrated (EBSI)

The EBSI is a new P-phone channel unit that allows P-phone services to be integrated into a GR-303 interface group when interfacing with a Nortel DMS-100 switch. This new card eliminates the need for CEBS channel units at the COT and allows for concentration of P-phone services extending to the customers.

LITESPAN SOFTWARE FEATURES

EIU Ethernet Interface Unit With Both OSI and TCP/IP Protocol Stacks

Release 10.1 supports using the EIU channel unit with either the OSI or TCP/IP protocol stacks for communication with Litespan 2000/2012 systems. The EIU is similar to the CIU, but instead of an X.25 interface, it will provide an ethernet interface. This card is used to connect a Litespan system to the local communications network (LCN) in a central office LAN environment and interface with Litespan based software tools such as AMS and Litecraft that are also connected to the same local communications network.

GR-303 Interface Group Provisioning Support for DMS-100 P-Phone Service

When using the new electronic business set integrated (EBSI) P-phone card, the Litespan software is able to assign call reference values (CRV) to P-phone circuits and provision them in a GR-303 interface group when interfacing with a Nortel DMS-100 switch.

GTD-5 Interoperability including GR-303 Interface Group Provisioning Support for ISDN Service

The GTD-5 switch is now fully supported by the Litespan platform. The Litespan software is also able to provide GR-303 support when interfacing ISDN services from a Litespan system to a GTD-5 switch.

GR-303 CRV Expansion to 5376 Lines

With the BFB and all of its associated BRXs, the number of subscribers on a Litespan node can reach 5376. The number of CRVs has been expanded on the system to accommodate all the lines. Because the maximum number of lines (CRVs) per GR-303 interface is 2048, at least 3 interface groups are required to support all 5376 lines. Each Litespan node can support four independent virtual interface groups (VIG).

Database Change Notification

The database change notification feature is used to update element management systems (EMS) such as AMS of any equipment, facility, or cross-connection changes made to the monitored Litespan databases. If a change occurs, the Litespan will send a TL1 message (REPT-DBCHG) via the autonomous message channel, informing an EMS of the changes. The EMS can then retrieve the changes by issuing the TL1 command (RTRV-DBCHG) to the Litespan. The Litespan system will then send the recent changes so the EMS can be updated. This new feature does not currently support ADSL-related information.

Alarm History

The new alarm history feature allows the Litespan database to store alarms and conditions for future retrieval. The TL1 command (RTRV-LOG-ALM) allows for a retrieval of up to 200 alarms and conditions from the past. This command allows for a selective retrieval based on chronological order, date, time, and alarm transition type.

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TL1 Drop Test Initiation

A new TL1 command (DGN-DROP-T0) will execute mechanical line testing (MLT) on the copper lines leaving ONUs equipped with MTADTs or the new MTRG/MTRG2s. When the tests are finished, a TL1 response is generated displaying the results of the MLT tests.

Yellow Alarm Idle Pattern Detection

This new software feature allows for the recognition of the yellow alarm indication signal, which is based on detection of an idle signal pattern when using the asynchronous wideband channel units including the ADSIU and ATIU. This feature becomes useful when a customer disconnects or powers down remote DSL equipment connected to a Litespan asynchronous wideband channel unit and the CPE (customer premises equipment) sends all zeros. If this situation happens and the smart jack is equipped with the yellow alarm capability, an idle signal pattern will be sent instead of all zeros raising the appropriate alarm severity.

ADSL PLATFORM

Alcatel is introducing a new high-speed ADSL (asymmetric digital subscriber line) solution based on the existing Litespan platform. By outfitting the existing and widely deployed Litespan channel bank with ABCUs (ATM bank controller units) replacing the existing BCUs (bank controller units), both ADSL and traditional Litespan services can be provided. The ADSL-equipped channel bank interfaces with an ATM switch via an OC-3c (STS-3c), and up to 32 ADSL-equipped channel banks can be daisy chained sharing the same optical facility. The ADSL platform currently supports two different QoS (qualities of service) choices: CBR (constant bit rate), which is used for services that require real time access; and UBR (unspecified bit rate) for services that include Internet and data traffic. The ABCU-equipped channel bank transfers the traditional TDM-based Litespan services to the common control using the standard TSI cables, and routes all the ATM traffic received from the ADLU channel units toward the ATM switch via the OC-3c (STS-3c) interface. The ADLU channel units combine the circuitry for both the ADSL DMT and POTS facilities. At the customer location, the POTS circuit is terminated at a POTS splitter, and the ADSL portion of the circuit is terminated by an Alcatel-1000 ANT (ADSL network termination).

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ADSL HARDWARE FEATURES

ABCU

The ABCU3IF2 is the new channel bank control card that is to be used in place of existing bank control units (BCU) in channel banks that will be used to deliver ADSL services. This new card has the ability to perform the same operational characteristics as the BCU regarding TDM-based traffic, but in addition, has the ability to handle ATM-based ADSL services. This card contains two OC-3c optical interface terminations, one for an upchain connection and one for the downchain connection. The upchain interface looks toward the ATM switch that feeds the ADSL channel banks, and the downchain interface looks at the next ABCU-equipped channel bank in the ADSL chain. When an ADSL-equipped channel bank uses two ABCUs, the channel bank has the ability to be both optically and equipment protected.

Dual ADSL DMT with POTS (Low-Power)

The ADLUD2EP and the ADLUD2FP are two new low-power ADSL channel units. Both of these cards contain two ADSL DMT facilities and two integrated POTS circuits. The ADLUD2EP is based on the backplane powering scheme, and the ADLUD2FP is based on the power distribution fan assembly (PDFA) powering scheme. When using the PDFA-powered channel units, all 56 slots within a channel bank may be used. There are limitations on the amount of backplane-powered channel units used within a channel bank, and those guidelines are in the *Litespan ADSL Planning Guide*. The power consumption is 6.9 watts per card for the two ADSL circuits when active. The maximum downstream data rate is 8.128 Mbps and the maximum upstream rate is 960 kbps.

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ADSL SOFTWARE FEATURES

PVCs for CBR or UBR Drop Side ADSL Connections

Each ADSL facility now supports four fixed PVC assignments. These PVCs include (VPI, VCI): (0,32)=UBR; (0,35)=UBR; (8,35)=UBR; and (0,40)=CBR. The reason for three different VPI/VCI combinations for UBR services pertains to the fact that different ADSL cards and ADSL network terminations (ANT) support different combinations of VPI/VCIs.

Power Management Feature for ADSL

This software feature is designed to ensure that the maximum power draw within a channel bank is never reached. The system tracks power drain based on the number of ADSL cards and facilities provisioned within the channel bank. If the maximum power threshold is reached, additional ADLUs cannot be equipped, and an alarm is generated.

BROADBAND PLATFORM

Alcatel is introducing a powerful new broadband platform that is used in conjunction with the Litespan platform for a complete TDM and broadband solution. The broadband platform is an extension of the Litespan 2000/2012 platform and revolves around the introduction of the BFB and its supported optical extensions, which include the BRX. The BRX is a broadband-capable fiber-to-the-curb solution that uses OC-3c (STS-3c) optical facilities. This new broadband platform has the ability to transport both the existing TDM-based services offered by the Litespan platform and the new ATM-based broadband services including ADSL channel bank traffic. In release 10.1, the BFB platform will support only TDM narrowband and wideband services. In the next planned release, the BFB and BRX will be capable of delivering ATM/broadband services.

BROADBAND HARDWARE FEATURES

Broadband Fiber Bank (BFB)

The broadband fiber bank, the core of a broadband system, is responsible for distributing broadband cell and TDM based telephony traffic between the network side and the distribution side interfaces. On the network side, the BFB has optical interfaces to ATM switches for data and interactive services. The BFB interfaces with the Litespan host

digital terminal (HDT) common control shelf over standard Litespan time-slot interchange (TSI) cables for TDM-based telephony traffic handoff and system control. On the distribution side interface, the BFB provides optical links that are extended to optical network units (ONU), and, in the future, to Litespan ADSL-equipped channel banks, Alcatel ASAMs, DSL access multiplexers, and broadband channel banks. The BFB is physically arranged into four quadrants. At the center of the BFB are the units that manage the ATM and TDM traffic. The rest of the BFB contains 32 optical card slots that are universal in nature. These universal optical card slots can be used for network side interfaces to ATM switches, or alternately they can be used as distribution side interfaces to ONUs in the local loop. The BFB can aggregate ATM traffic from Litespan ADSL channel banks, Alcatel ASAMs, DSL access multiplexers as well as from the supported ONUs. The broadband platform minimizes the number of ATM switch ports needed in early service years while accommodating increases in capacity as service demand grows. Flexible assignment of optical interfaces for network-side or distribution-side feeds allows for efficient use of the BFB. The BFB, fully NEBS-3 compliant, may be located in the central office or in a remote RT location.

Broadband Remote Transceiver (BRX)

The broadband remote transceiver is an ONU that is used to support TDM- and ATM-based services. In the future, among the broadband services this fiber-to-the-curb solution will provide include ADSL, VDSL, and ethernet. The BRX is optically fed from the Litespan broadband fiber bank using an OC-3c originating at the quad-optical line unit, single fiber (QOLUS) in the BFB. The BRX provides eight slots for channel units, allowing up to 64 POTS lines initially (w/octal POTS cards) or any combination of Litespan channel units. There are additional slots for common channel units to support the MTRG and redundant BMU2. In this software release, up to 180 BRXs can be supported from a Litespan terminal. Any of the traditional Litespan cards can reside in any of the eight card slots.

Broadband Multiplexing Unit, Version 2 (BMU2)

The BRX multiplexing unit (BMU) is a common channel unit that resides in the BRX. The BMU performs time slot assignment, ATM cell multiplexing, initialization, diagnostics, ONU timing and synchronization, alarm reporting, maintenance interfacing and is the termination interface for the fiber facility.

Maintenance Test and Ring Generator Unit (MTRG)

The new MTRG card is a maintenance test and ring generator unit used in the BRX. This card is used to provide ringing voltage for voice services, PGTC functionality, MLT drop test capabilities, and network power monitoring. This card can be used when the drop lengths are 600 ft or less.

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Maintenance Test and Ring Generator Unit, Version2 (MTRG2)

The new MTRG2 card is a maintenance test and ring generator unit used in the BRX. This card is used to provide the same ringing voltage, PGTC functionality, MLT drop test capabilities and network power monitoring that the MTRG does, but in addition can test drops up to 3300 feet long.

ATM Fiber Bank Interface Unit (AFIU)

The AFIU is one of the main common cards in the BFB that interfaces with the time slot interchanger (TSI) cards in the Litespan common control assembly. The AFIU is responsible for coordinating the delivery of TDM services to and from the BFB ONU extensions. The AFIU routes the TDM channels to the optical line units (OLU) associated with the destination ONU from the Litespan common control for delivery of TDM-based services.

Quad Optical Line Unit Single Fiber (QOLUS)

The QOLUS is an optical distribution card that is used in the BFB as a means to feed the ONUs (like the BRX) in the local loop. The QOLUS has four fibers, each carrying a bidirectional OC-3c to support up to four BRXs from one card at one fiber per BRX.

Eight Line Remote POTS Low Power (8RPLP) Channel Unit for the BRX Only

The 8RPLP is a low power eight-line POTS channel unit. Initial deployment will be from the broadband remote transceiver (BRX) only and allows for a greater POTS density. Because this is a low power card, the maximum drop distance is limited to 3000 feet.

(750 MHz) Optical Video Receiver Units (OVRU4) for Wave Division Video

The OVRU4 is an optical video receiver unit for the new wave division video (WDV) application. This channel unit is currently supported in the BRX and in the ONU-24. The video service is transported to an ONU on a 1550-nm video signal from an optical fiber amplifier (OFA) that is terminated to a video source on the network side. This 1550-nm optical video signal is transported to an ONU with a 1310-nm signal using the same fiber via a WDM multiplexing system and is terminated on an OVRU4 or OVRUG card, which will be located in an ONU. From either the OVRU4 or OVRUG card a fiber jumper carrying the 1310-nm optical signal is run to either the BMU2 (when using the BRX) or the optical line unit (when using the ONU-24). The OVRU4 has a video signal that consists of a 55- to 550-MHz spectrum dedicated to 82 analog channels, and a 550- to 750-MHz spectrum dedicated

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to 33 digital channels of 64-QAM at 6 MHz a channel. This card is designed to handle up to eight coax drops to subscribing customers.

(1 GHz) Optical Video Receiver Units (OVRUG) for Wave Division Video

The OVRUG uses the same concept as the OVRU4, but has a greater capacity for analog channels and can output more coax subscriber drops. The OVRUG has a video signal that consists of a 50- to 750-MHz spectrum dedicated to 110 analog channels and a 750- to 1000-MHz spectrum dedicated to 33 channels of 64-QAM at 6 MHz a channel. This card was designed to handle between 8 and 20 coax drops to subscribing customers

STARSPAN FEATURES

ENU-96 Electrically Fed Network Unit

The ENU is an electrically fed network unit that uses DS1 rate wideband channel units to interface with a Litespan channel bank to create an ENU interface group. It uses the same card cage as the ONU-96 with 24 available slots for channel units. The ENU has five slots that are wired for wideband cabling. If T1U/DS1 cards are used, only five can be used to interface to the Litespan channel bank. When HDSL channel units are used to interface to a channel bank, up to nine can be used to transport up to 180 DS0s because they use the narrowband wiring. When the ENU is hosted from a Litespan HDT that supports GR-303, TR-008, or TR-057, the ENU can provide universal or integrated services along with subscriber line concentration by assigning GR-303 CRVs (call reference value). The ENU is capable of being remotely provisioned and has alarm visibility at the supporting HDT.

NEW SOFTWARE KEYS

The OC12 HSU software key is required to support OC12 in a Litespan-2012.

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